AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method of motion artifact compensation in a projection data set of an object of interest, wherein the projection data set is acquired by means of a source of electromagnetic radiation generating a beam and by means of a radiation detector detecting the beam, the method comprising the steps of:

<u>selecting projection data corresponding to a first ray and a second ray from the projection data set;</u>

<u>wherein the first and second rays are diametrically opposed rays passing through a same object point;</u>

<u>determining a difference of the projection data corresponding to the first and second rays;</u>

<u>wherein the difference is indicative of motion of the object of interest corresponding to motion artifacts;</u>

<u>generating a motion artifact compensated data set by</u> compensating the projection data set for [[a]] <u>the</u> motion artifact<u>s</u> on the basis of the difference~~, resulting in a motion artifact compensated projection data set~~; <u>and</u>

<u>generating a motion artifact compensated image by</u> reconstructing the object of interest from the motion artifact compensated projection data set~~, resulting in a motion artifact compensated image;~~

~~wherein a first ray and a second ray create projection data of the projection data set;~~

~~wherein the first ray and the second ray are opposite rays passing through a single object point;~~

~~determining a difference of the projection data of the first ray and the projection data of the second ray; and~~

~~wherein the difference of the projection data of the first ray and the projection data of the second ray is due to the motion of the object of interest resulting in motion artifacts~~.

2. (Currently amended) The method according to claim 1, wherein the determination of a difference between the first ray and the second ray further comprises the steps of:

~~selecting the first ray and the second ray on the basis of the projection data;~~

determining[[,]] whether the difference between the first ray and the second ray is bigger than a predetermined threshold; and

compensating the projection data set for a motion artifact ~~wherein,~~ if the difference is bigger than the predetermined threshold~~, a motion artifact compensation of the projection data set is performed~~.

3. (Original) The method according to claim 1, wherein the second ray is interpolated from adjacent rays.

4. (Original) The method according to claim 1,

wherein the object of interest comprises a plurality of object points;

wherein a reconstruction of a first object point of the plurality of object points is performed by an exact reconstruction algorithm; and

wherein, if the motion artifact results from a motion of the first object point, the motion artifact is compensated for by a low pass filtering of the projection data in the region of the motion artifact before the reconstruction of the first object point by the exact reconstruction algorithm.

5. (Currently amended) The method according to claim 4,

wherein the source of radiation moves around the object of interest; and

wherein the exact reconstruction algorithm uses projection data resulting from one of no more than half a revolution and three half revolutions of the source of radiation.

6. (Original) The method according to claim 4, wherein characteristics of the low pass filtering correspond to properties of the projection data in the region of the motion artifact.

7. (Original) The method according to claim 1,

wherein the object of interest comprises a plurality of object points;

wherein a reconstruction of a first object point is performed by an approximate reconstruction algorithm;

wherein an over-scan range is used for reconstruction of the first object point; and

wherein, if the motion artifact results from a motion of the first object point, the motion artifact is compensated for by increasing the over-scan range.

8. (Original) The method according to claim 7,

wherein the first object point belongs to a PI-line on which motion has been detected; and

wherein the increase of the over-scan range corresponds to properties of the projection data in the region of the motion artifact.

9. (Original) The method according to claim 7, wherein the approximate reconstruction algorithm is one of a WEDGE algorithm and a PI-filtered back-projection algorithm.

10. (Original) The method according to claim 1,

wherein the source of electromagnetic radiation is a polychromatic x-ray source;

wherein the source moves along a helical path around the object of interest; and

wherein the beam has one of a cone beam and a fan beam geometry.

11. (Currently amended) A data processing device comprising:

a memory for storing a data set;

a data processor for performing motion artifact compensation in a projection data set of an object of interest, wherein the data processor is adapted for performing the following operation:

loading the projection data set acquired by means of a rotating source of electromagnetic radiation generating a beam and by means of a radiation detector detecting the beam;

wherein projection data corresponding to a first ray and a second ray is selected from the projection data set and the first and second rays are diametrically opposed rays passing through a same object point;

determining a difference of the projection data corresponding to the first and second rays;

wherein the difference is indicative of motion of the object of interest corresponding to motion artifacts;

generating a motion artifact compensated data set by compensating the projection data set for [[a]] the motion artifacts on the basis of the difference~~, resulting in a motion artifact compensated projection data set~~; and

generating a motion artifact compensated image by reconstructing the object of interest from the motion artifact compensated projection data set~~, resulting in a motion artifact compensated image;~~

~~wherein the first ray and the second ray create projection data of the projection data set; wherein the first ray and the second ray are opposite rays passing through a single object point;~~

~~determining a difference of the projection data of the first ray and the projection data of the second ray; and~~

~~wherein the difference of the projection data of the first ray and the projection data of the second ray is due to the motion of the object of interest resulting in motion artifacts~~.

12. (Currently amended) A computer-readable medium storing a computer program for performing motion artifact compensation in a projection data set of an object of interest, wherein the computer program causes a processor to perform the following operation when the computer program is executed on the processor:

loading the projection data set acquired by means of a rotating source of electromagnetic radiation generating a beam and by means of a radiation detector detecting the beam;

wherein projection data corresponding to a first ray and a second ray is selected from the projection data set and the first and second rays are diametrically opposed rays passing through a same object point;

determining a difference of the projection data corresponding to the first and second rays;

wherein the difference is indicative of motion of the object of interest corresponding to motion artifacts;

generating a motion artifact compensated image by compensating the projection data set for [[a]] the motion artifacts on the basis of the difference~~, resulting in a motion artifact compensated projection data set~~; and

generating a motion artifact compensated image by reconstructing the object of interest from the motion artifact compensated projection data set~~, resulting in a motion artifact compensated image;~~

~~wherein the first ray and the second ray create projection data of the projection data set;~~

~~determining a difference of the projection data of the first ray and the projection data of the second ray; and~~

~~wherein the difference of the projection data of the first ray and the projection data of the second ray is due to the motion of the object of interest resulting in motion artifacts~~.

13. (New) The computer-readable medium of claim 12, wherein determining a difference between the first ray and the second ray further comprises:

determining whether the difference between the first ray and the second ray is bigger than a predetermined threshold; and

compensating the projection data set for a motion artifact if the difference is bigger than the predetermined threshold.

14. (New) The computer-readable medium of claim 12, wherein the second ray is interpolated from adjacent rays.

15. (New) The computer-readable medium of claim 12,

wherein the object of interest comprises a plurality of object points;

wherein a reconstruction of a first object point of the plurality of object points is performed by an exact reconstruction algorithm; and

wherein, if the motion artifact results from a motion of the first object point, the motion artifact is compensated for by a low pass filtering of the projection data in the region of the

motion artifact before the reconstruction of the first object point by the exact reconstruction algorithm.

16. (New) The computer-readable medium of claim 15,

wherein the source of radiation moves around the object of interest; and

wherein the exact reconstruction algorithm uses projection data resulting from one of no more than half a revolution and three half revolutions of the source of radiation.

17. (New) The computer-readable medium of claim 15, wherein characteristics of the low pass filtering correspond to properties of the projection data in the region of the motion artifact.

18. (New) The computer-readable medium according to claim 12,

wherein the object of interest comprises a plurality of object points;

wherein a reconstruction of a first object point is performed by an approximate reconstruction algorithm;

wherein an over-scan range is used for reconstruction of the first object point; and

wherein, if the motion artifact results from a motion of the first object point, the motion artifact is compensated for by increasing the over-scan range.

19. (New) The method according to claim 1, wherein the first ray and the second ray are not opposite adjacent rays.

20. (New) The method according to claim 1, wherein the radiation detector at a first projection angle is not offset from the radiation detector at a second projection angle 180° from the first projection angle.